

Application No. : 10/645,331
Filed : August 21, 2003

AMENDMENTS TO THE CLAIMS

Please cancel Claims 1, 2, and 28-38 without prejudice, as indicated below.

A complete listing of all claims is presented below with insertions underlined (e.g., insertion), and deletions struckthrough or in double brackets (e.g., ~~deletion~~ or [[deletion]]):

1. (Cancelled)
2. (Cancelled)
3. (Original) A method of measuring a nonlinearity profile of a sample, the method comprising:

providing a sample having a sample nonlinearity profile;

placing a surface of the sample in proximity to a surface of a supplemental sample to form a composite sample having a composite nonlinearity profile;

measuring a Fourier transform magnitude of the composite nonlinearity profile;
and

calculating the sample nonlinearity profile using the Fourier transform magnitude of the composite nonlinearity profile.

4. (Original) The method of Claim 3, wherein the sample nonlinearity profile is non-symmetric.

5. (Original) The method of Claim 3, wherein the composite nonlinearity profile is symmetric about the origin.

6. (Original) A method of measuring a nonlinearity profile of a sample, the method comprising:

providing a sample having at least one sample surface and having a sample nonlinearity profile along a sample line through a predetermined point on the sample surface, the sample line oriented perpendicularly to the sample surface;

measuring a Fourier transform magnitude of the sample nonlinearity profile;

providing a reference material having at least one reference surface and having a reference nonlinearity profile along a reference line through a predetermined point on the reference surface, the reference line oriented perpendicularly to the reference surface;

obtaining a Fourier transform magnitude of the reference nonlinearity profile;

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forming a first composite sample having a first composite nonlinearity profile by placing the sample and the reference material proximate to one another in a first configuration with the sample line substantially collinear with the reference line;

measuring a Fourier transform magnitude of the first composite nonlinearity profile;

forming a second composite sample having a second composite nonlinearity profile which is inequivalent to the first composite nonlinearity profile by placing the sample and the reference material proximate to one another in a second configuration with the sample line substantially collinear with the reference line;

measuring a Fourier transform magnitude of the second composite nonlinearity profile; and

calculating the sample nonlinearity profile using the Fourier transform magnitudes of the sample nonlinearity profile, the reference nonlinearity profile, the first composite nonlinearity profile, and the second composite nonlinearity profile.

7. (Original) A method of measuring a nonlinearity profile of a sample, the method comprising:

providing a sample having at least one sample surface and having a sample nonlinearity profile along a sample line through a predetermined point on the sample surface, the sample line oriented perpendicularly to the sample surface;

providing a reference material having at least one reference surface and having a reference nonlinearity profile along a reference line through a predetermined point on the reference surface, the reference line oriented perpendicularly to the reference surface;

forming a first composite sample having a first composite nonlinearity profile by placing the sample and the reference material proximate to one another in a first configuration with the sample line substantially collinear with the reference line;

measuring a Fourier transform magnitude of the first composite nonlinearity profile;

forming a second composite sample having a second composite nonlinearity profile which is inequivalent to the first composite nonlinearity profile by placing the sample and the reference material proximate to one another in a second configuration with the sample line substantially collinear with the reference line;

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measuring a Fourier transform magnitude of the second composite nonlinearity profile; and

calculating the sample nonlinearity profile using the Fourier transform magnitudes of the first composite nonlinearity profile and the second composite nonlinearity profile.

8. (Original) The method of Claim 7, wherein:

the sample has a first sample surface and has a second sample surface substantially parallel to the first sample surface;

the first configuration has the first sample surface proximate to the reference surface; and

the second configuration has the second sample surface proximate to the reference surface.

9. (Original) The method of Claim 7, wherein:

the reference material has a first reference surface and has a second reference surface substantially parallel to the first reference surface;

the first configuration has the sample surface proximate to the first reference surface; and

the second configuration has the sample surface proximate to the second reference surface.

10. (Original) The method of Claim 7, wherein the sample comprises poled silica.

11. (Original) The method of Claim 7, wherein the sample comprises a nonlinear organic material.

12. (Original) The method of Claim 7, wherein the sample comprises a nonlinear inorganic material.

13. (Original) The method of Claim 12, wherein the sample comprises an amorphous material.

14. (Original) The method of Claim 7, wherein the first configuration comprises the sample and the reference material in an anode-to-anode configuration in which an anodic surface of the sample is proximate to an anodic surface of the reference material.

15. (Original) The method of Claim 14, wherein the second configuration comprises the sample and the reference material in an anode-to-cathode configuration in which an anodic surface of the sample is proximate to a cathodic surface of the reference material.

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16. (Original) The method of Claim 14, wherein the second configuration comprises the sample and the reference material in an cathode-to-anode configuration in which a cathodic surface of the sample is proximate to an anodic surface of the reference material.

17. (Original) The method of Claim 7, wherein the first configuration comprises the sample and the reference material in a cathode-to-cathode configuration in which a cathodic surface of the sample is proximate to a cathodic surface of the reference material.

18. (Original) The method of Claim 17, wherein the second configuration comprises the sample and the reference material in an anode-to-cathode configuration in which an anodic surface of the sample is proximate to a cathodic surface of the reference material.

19. (Original) The method of Claim 17, wherein the second configuration comprises the sample and the reference material in an cathode-to-anode configuration in which a cathodic surface of the sample is proximate to an anodic surface of the reference material.

20. (Original) The method of Claim 7, wherein the first configuration comprises a spacer material between the sample and the reference material.

21. The method of Claim 7, wherein the second configuration comprises a spacer material between the sample and the reference material.

22. (Original) The method of Claim 7, wherein measuring the Fourier transform magnitude of the first composite nonlinearity profile comprises measuring the Maker fringe profile of the first composite sample.

23. (Original) The method of Claim 7, wherein measuring the Fourier transform magnitude of the first composite nonlinearity profile comprises focusing a pulsed laser beam onto the first composite sample at an incident angle, generating a second-harmonic signal, and measuring the generated second-harmonic signal as a function of the incident angle.

24. (Original) The method of Claim 7, wherein measuring the Fourier transform magnitude of the second composite nonlinearity profile comprises measuring the Maker fringe profile of the second composite sample.

25. (Original) The method of Claim 7, wherein measuring the Fourier transform magnitude of the second composite nonlinearity profile comprises focusing a pulsed laser beam onto the second composite sample at an incident angle, generating a second-harmonic signal, and measuring the generated second-harmonic signal as a function of the incident angle.

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26. (Original) The method of Claim 7, further comprising calculating the reference nonlinearity profile using the Fourier transform magnitudes of the first composite nonlinearity profile and the second composite nonlinearity profile.

27. (Original) A method of measuring nonlinearity profiles of a plurality of samples, the method comprising:

(a) measuring a first nonlinearity profile of a first sample using the method of Claim 26;

(b) measuring a second nonlinearity profile of a second sample using the method of Claim 26, wherein the same reference material is used to measure the first and second nonlinearity profiles; and

comparing the calculated reference nonlinearity profiles from (a) and (b) to provide an indication of the consistency of the measurements of the first and second nonlinearity profiles.

28.-38. (Cancelled)